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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,812	09/22/2006	Kouji Nishikawa	296483US0PCT	5609
22850	7590	09/19/2007		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER EOFF, ANCA	
			ART UNIT 1753	PAPER NUMBER
			NOTIFICATION DATE 09/19/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	Application No. 10/593,812	Applicant(s) NISHIKAWA ET AL.	
	Examiner Anca Eoff	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9/22/06, 12/22/06, 4/24/07, 7/02/07.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____  |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :12/22/2006, 04/24/2007, 07/02/2007 .

### DETAILED ACTION

1. The foreign priority document JP 2004/087520 was received and acknowledged.

However, in order to benefit of the earlier filing date, a certified English translation is required.

2. Claims 1-11 are pending in the application.

### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-4, 6-7 and 9-11 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-4, 6-11 of copending Application No.11/677339 (US Pg-Pub 2007/0196765). Although the conflicting claims are not identical, they are not patentably distinct from each other

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because both application claim a positive radiation-sensitive composition comprising a polymer (A), an acid generator (B) and a solvent (C), said polymer (A) comprising units with an acid-dissociable group, units derived from a (meth)acrylamide and/or a hydroxyphenyl (meth)acrylate and a method of producing a plated article using the positive radiation-sensitive composition.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 1-4 and 6-11 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3-4, 6-11 of copending Application No. 11/497300 (US Pg-Pub 2007/0031758). Although the conflicting claims are not identical, they are not patentably distinct from each other because both application claim a positive radiation-sensitive composition comprising a polymer (A), an acid generator (B) and a solvent (C), said polymer (A) comprising units with an acid-dissociable group, units derived from a (meth)acrylamide and/or a hydroxyphenyl (meth)acrylate and a method of producing a plated article using the positive radiation-sensitive composition.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraph of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

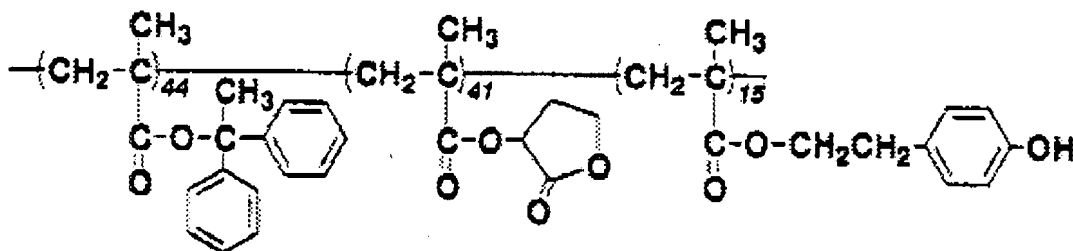
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A person shall be entitled to a patent unless –

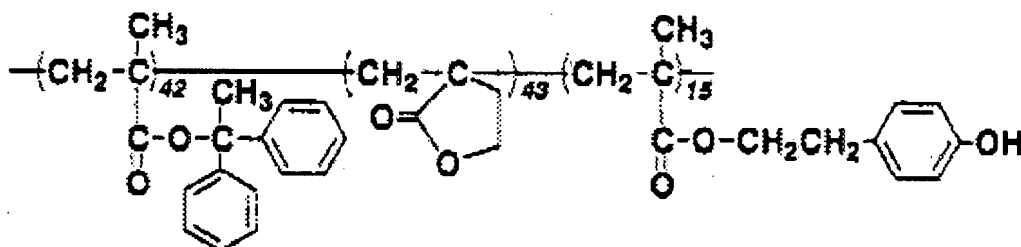
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroyuki (JP 2004-29437).

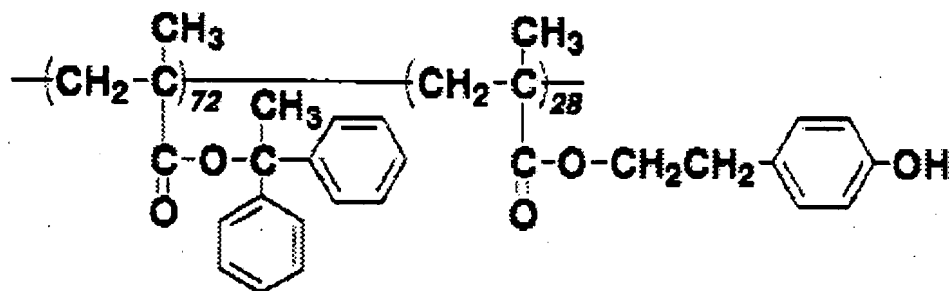
With regard to claims 1,3 and 4, Hiroyuki disclose a positive-type resin comprising a resin with the structure represented by formulas (I)-(III):



(I) (formula 9 in par.0054)

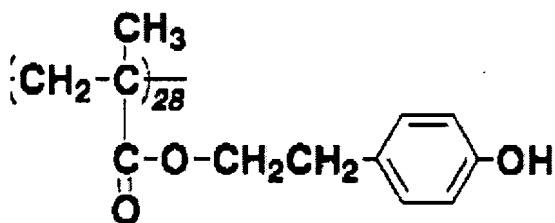
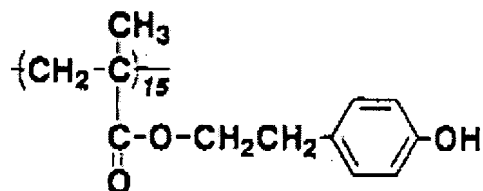
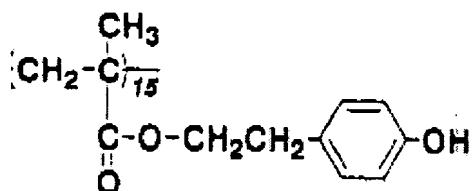


(II) (formula 15 in par.0066)



(III) (formula 17 in par.0070).

In formulas (I)-(III) above, the first structural unit is equivalent to the structural unit (b) comprising an acid-dissociable group of the instant application and the structural units:



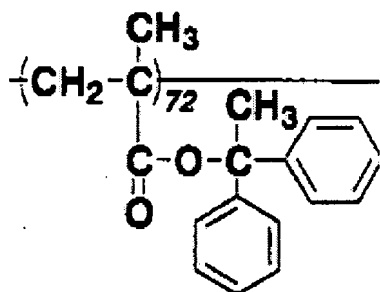
in formulas (I)-(III) are equivalent to the structural unit of formula (2) of the instant application where R<sub>1</sub> is a methyl group, R<sub>2</sub> is an  $-(CH_2)_n-$  with n=2 and m=0.

The composition further comprises an acid generator (par.0039) and a solvent (par.0049).

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Claims 3 and 4 merely recite the intended use of the positive radiation-sensitive composition of claim 1, which does not add any patentable weight to the claims.

With regard to claim 2, Hirouki discloses that the unit comprising acid-dissociable group has the structure:

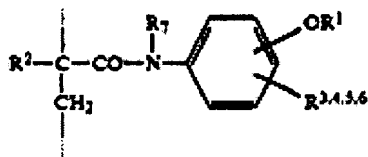


which is equivalent to the structure in formula (3) of the instant application where  $R_4$  is a methyl group,  $R_5$  is a methyl group and  $R_6$ ,  $R_7$  are phenyl groups.

With regard to claim 7, Hirouki further discloses that the radiation-sensitive composition comprises acid diffusion inhibitors, such as amines (par.0048).

8. Claims 1, 3-5 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Przybilla et al. (US Patent 5,326,840).

With regard to claims 1,3 and 4, Przybilla et al. disclose a radiation-sensitive mixture comprising a polymeric binder having acid-cleavable side groups, represented by the formula (IV):





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(IV), where  $R^1$  is an acid-cleavable/acid-dissociable group (column 2, lines 49-64). Such a compound/monomer is N-(3-tert-butoxycarbonyloxyphenyl) (meth)acrylamide (column 3, lines 52-53).

Pryzbilla et al. specifically disclose a radiation-sensitive mixture comprising:

- a copolymer of N(3-hydroxyphenyl)methacrylamide and N(3-tert-butoxycarbonyloxyphenyl) methacrylamide which is equivalent to the polymer (A) of the instant application

In this polymer, N-(3-hydroxyphenyl) methacrylamide is equivalent to the structural unit of formula (1) of the instant application where  $R_1$  is a methyl group,  $R_2$  is  $-(CH_2)_n-$  with  $n=0$ ,  $m=0$  and N-(3-tert-butoxycarbonyloxyphenyl) methacrylamide is equivalent to the structural unit having an acid-dissociable group of the instant application.

- a photoacid generator;
- solvent (Application Example 1, column 8).

Pryzbilla et al. also disclose a radiation-sensitive mixture comprising:

- a copolymer of (2-hydroxyphenyl)methacrylate and N(3-tert-butoxycarbonyloxyphenyl) methacrylamide which is equivalent to the polymer (A) of the instant application

In this polymer, (2-hydroxyphenyl)methacrylate is equivalent to the structural unit of formula (2) of the instant application where  $R_1$  is a methyl group,  $R_2$  is  $-(CH_2)_n-$  with  $n=0$ ,  $m=0$  and N-(3-tert-butoxycarbonyloxyphenyl) methacrylamide is equivalent to the structural unit having an acid-dissociable group of the instant application.

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- a photoacid generator;
- solvent (Application Example 2, column 8).

Claims 3 and 4 merely recite the intended use of the positive radiation-sensitive composition of claim 1, which does not add any patentable weight to the claims.

With regard to claim 5, Przybilla et al. disclose that the radiation-sensitive mixture comprises:

- 3 parts by weight of photoacid generator based on 100 parts by weight of the resin/copolymer, and
- 74.44 parts by weight of solvent based on 100 parts by weight of the radiation-sensitive mixture (Application Example 1, column 8).

With regard to claim 9, Przybilla et al. disclose a recording material having a base and a layer containing the radiation-sensitive mixture (column 5, lines 19-21).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirouki (JP 2004-29437) in view of Ohta et al. (US Pg-Pub 2004/0038148).

With regard to claims 1 and 6, Hirouki discloses a positive-type resist composition comprising a resin comprising a structural unit with acid-dissociable units

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and a structural unit equivalent to the unit of formula (2) of the instant application but fails to disclose that the positive type resist further comprises another alkali-soluble resin.

Ohta et al. disclose a positive-type radiation sensitive resin composition comprising a polymer, said polymer containing structural units with acid-dissociative groups (par.0026).

Ohta et al. further disclose that the positive-type radiation sensitive may further comprise an alkali-soluble resin, other than the polymer mentioned above (par.0126). By addition of such an alkali-soluble resin, the rate at which the resin film formed from the positive-type radiation sensitive resin composition is dissolved in an alkali developer can be more easily controlled, and as result, developing properties can be further enhanced (par.0127).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to add an alkali-soluble resin as disclosed by Ohta et al. in the positive-type resin of Hirouki et al., in order to enhance the developing properties and have a better control of the dissolution in alkali developers (Ohta et al., par.0127).

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirouki (JP 2004-29437) in view of Jeon et al. (US Patent 6,210, 859).

With regard to claims 1 and 8, Hirouki discloses a positive-type resist composition comprising a resin comprising a structural unit with acid-dissociable units and a structural unit equivalent to the unit of formula (2) and an acid generator, such as

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an onium salt (par.0039). Hirouki discloses that an onium salt such as triphenylsulfonium triflate/trifluoromethane sulfonate can be used as acid generator (par.0050) but fails to disclose that the onium salt used as acid generator is one of the compounds required by claim 8.

Jeon et al. disclose a chemical amplified photoresist composition comprising an acid with dissociable groups and an acid generator (abstract). The acid generator in the photoresist composition can be a triphenylsulfonium triflate or diphenyl (4-t-butylphenyl)sulfonium triflate (column 5, lines 5-9).

Due to the fact that triphenylsulfonium triflate and diphenyl (4-t-butylphenyl)sulfonium triflate are functionally equivalent, it would have been obvious for one of ordinary skill in the art at the time of the invention to use the diphenyl (4-t-butylphenyl)sulfonium triflate as acid generator in the composition of Hirouki et al.

12. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US Pg-Pub 2004/0038148) in view of Przybilla (US Patent 5,326,840).

With regard to claims 1, 9 and 10, Ohta et al. disclose a positive-type radiation sensitive resin composition comprising a polymer, said polymer containing structural units with acid-dissociative groups (par.0026). The positive-type radiation sensitive composition can be applied on a support film to form a resin film (par.0151) and the resin of the resin film can be varied depending upon the use application of the product formed by plating. In case of a bump, the thickness of the resin film is in the range of 20 to 100  $\mu\text{m}$  (par.0160).

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Ohta et al. further disclose that the positive-type radiation sensitive material comprises a polymer (A) and an acid generator (B) (par.0018), wherein said polymer (A) is not limited as long as the polymer has an acid-dissociative functional group which is dissociated by an acid to generate an acid functional group (par.0026).

However, Ohta et al. fail to disclose a polymer that meets the limitations of claim 1 of the instant application.

Przybilla et al. disclose a radiation-sensitive mixture comprising a polymeric binder having acid-cleavable side groups (column 2, lines 49-64) and an acid generator.

The polymeric binder of Przybilla et al. meets the limitations for the resin (A) in claim 1 of the instant application (see paragraph 8 of the Office Action).

Due to the fact that the radiation sensitive mixture of Przybilla et al. comprises a polymer that comprises acid-dissociable groups and meets the condition of Ohta et al., it would have been obvious for one of ordinary skill in the art to use the radiation-sensitive mixture of Przybilla et al. to form the resin film of Ohta et al. with a reasonable expectation of success.

With regard to claims 1 and 11, Ohta et al. disclose a process comprising the following steps:

- applying the positive-type radiation sensitive composition onto a substrate having a conductive layer (such as aluminium, copper, silver, gold, palladium and alloys of two or more kinds of these metals, as disclosed in par.0156) on its surface and drying to form a resin film;
- exposing, heating and developing the resin film to obtain a pattern;

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- electroplating using the pattern formed on the substrate as a mold;
- removing the resin film portion from the substrate;
- removing the conductive layer present on the area of the substrate other than the area where the product formed by plating has been formed (par.00153).

Ohta et al. further disclose that the positive-type radiation sensitive material comprises a polymer (A) and an acid generator (B) (par.0018), wherein said polymer (A) is not limited as long as the polymer has an acid-dissociative functional group which is dissociated by an acid to generate an acid functional group (par.0026).

However, Ohta et al. fail to disclose a polymer that meets the limitations of claim 1 of the instant application.

Przybilla et al. disclose a radiation-sensitive mixture comprising a polymeric binder having acid-cleavable side groups (column 2, lines 49-64) and an acid generator.

The polymeric binder of Przybilla et al. meets the limitations for the resin (A) in claim 1 of the instant application (see paragraph 8 of the Office Action)

Due to the fact that the radiation sensitive mixture of Przybilla et al. comprises a polymer that comprises acid-dissociable groups and meets the condition of Ohta et al., it would have been obvious for one of ordinary skill in the art to use the radiation-sensitive mixture of Przybilla et al. in the process of Ohta et al. with a reasonable expectation of success.

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**Conclusion**

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anca Eoff whose telephone number is 571-272-9810. The examiner can normally be reached on Monday-Friday, 6:30 AM-4:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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